THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte BRADLEY E. HANSON

Appeal No. 97-0610
Application No. 08/346,689[1]

ON BRIEF

Before HAIRSTON, BARRETT and FLEMING, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 24.

The disclosed invention relates to a method and apparatus for selecting a data recovery routine from among a plurality of data recovery routines based upon a type of data.

[1] Application for patent filed November 30, 1994.

Claim 18 is illustrative of the claimed invention, and it reads as follows:

18. An adaptive data recovery apparatus for a data storage disk, the data recovery apparatus comprising:

memory means for storing a plurality of data recovery routines;

selection means for selecting any of the plurality of data recovery routines in accordance with a type of data; and

control means, coupled to the selection and memory means, for performing the selected data recovery routines to correct an error when reading data from the data storage disk.

The references relied on by the examiner are:

Moriyama et al. (Moriyama)	4,654,853	Mar. 31, 1987
Cunningham et al. (Cunningham)	5,379,162	Jan. 3, 1995 (filed Aug. 19, 1993)

Claims 1 through 24 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cunningham in view of Moriyama.

Reference is made to the brief and the answer for the respective positions of the appellant and the examiner.

OPINION

We have carefully considered the entire record before us, and we will sustain the 35 U.S.C. § 103 rejection of claims 1,

3 through 14 and 16 through 24, and reverse the 35 U.S.C. § 103 rejection of claims 2 and 15.

Cunningham discloses a method and apparatus for data recovery in a disk drive data storage system. A plurality of data recovery procedures are stored in memory, and when a readback error is detected in a read-back data signal, one of the stored plurality of data recovery procedures is selected in response to the detected readback error and head and disk parameters. "A preferred data recovery procedure is defined specific to the failure mechanisms or risk factors at any given point or head/disk as illustrated and described with respect to FIGS. 3, 4 and 5" (column 4, lines 2 through 5). Although "many recovery procedures have been developed to correct for specific failure mechanisms," "[a] typical data recovery procedure includes rereads, head shifts and at least one error correcting code (ECC)" (column 1, lines 51 through 53 and column 8, lines 7 through 11). The examiner recognizes that "Cunningham does not explicitly teach selecting the recovery procedure based on the type of data" (Answer, page 3).

Moriyama teaches that different error recovery procedures should be used for different types of data. When the data is computer programs, an error correcting coding method is chosen so that error correction is acceptably high, and when the data is audio signals, a nonoptimum coding method is chosen for error correction (column 1, lines 39 through 53). At the transmission side of Moriyama's data transmission system, "an optimum coding method on which a data group including information data and a check word is based is selected in accordance with the contents or type of the information carried thereby, and a control code representing the thus-selected coding method is inserted into a data signal" (column 1, line 64 through column 2, line 2). At the reception side of Moriyama's data transmission system,

> the control code inserted in the data signal is extracted so as to determine the coding method on which the data group is based, and the data group is subjected to error detection/correction processing on the basis of the determined coding method to thereby recover the original information from the data group after error correction (column 2, lines 2 through 8).

A Reed-Solomon error correction circuit 75 is included in the error detection/correction circuit 52 (Figure 7, column 4,

lines 43 through 51).

The examiner is of the opinion (Answer, pages 3 and 4) that:

> It would have been obvious to one of ordinary skill in the art to combine the teachings of Moriyama with Cunningham because both inventions are concerned with customizing data recovery procedures. Although, Cunningham is generally concerned with various hardware parameters and not the particular type of data, both inventions are concerned with optimizing the data recovery procedures. One of ordinary skill in the art would have been aware of the fact that different types of data require different levels of recovery and would have been motivated to change the recovery according to the type of data which is being read. Therefore, it

> would have been obvious to include a data type discriminator as taught by Moriyama in a system such as Cunningham as a further means in which to optimize the data recovery.

Appellant argues that Moriyama discloses a "single error correction process (ECC)," and that Cunningham recognizes "the inherent limitations of using ECC for correcting errors that occur when reading data from a data storage disk" (Brief, page 6). Appellant's arguments are correct, but the rejection is not based upon the substitution of the ECC circuit as taught by Moriyama into the error correction process of Cunningham.[2]

As indicated supra, the examiner is only relying on the Moriyama teaching that different types of data require different error recovery procedures. If a reasonable suggestion has been made that different error recovery procedures be used for different types of data, then

[2] The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. Nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to the artisan. See In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).

appellant's assumption (Brief, pages 6 through 9) that Cunningham would turn to a least favored data recovery procedure (i.e., ECC) when there are better data recovery procedures among the stored plurality of data recovery procedures is without merit. Thus, we agree with the examiner that the skilled artisan would have known from the combined teachings of Cunningham and Moriyama that "different types of data require different levels of recovery," and that the data recovery level should be selected "according to the type of data which is being read" (Answer, pages 3 and 4).

Based upon the foregoing, the obviousness rejection of claim 1 is sustained. The obviousness rejection of claims 6, 11 and 12 is likewise sustained because of appellant's grouping of the claims (Brief, page 5). The obviousness rejection of claims 3 through 5, 8 through 10, 14, 16, 17, 18, 20, 22 and 23, is sustained because the applied references would have suggested to the skilled artisan to select a data recovery procedure from a plurality of data recovery procedures based upon the type of data on the disk. The obviousness rejection of claims 7 and 19 is sustained because Moriyama discloses (Figure 6) reception of a selection code,

and because we agree with the examiner (Answer, page 5) that "it would have been obvious to store the selection code with the host as an alternative location for storing this information." The obviousness rejection of claims 13, 21 and 24 is sustained because each of the disks in Cunningham is a "detachable memory module," and is a "reprogrammable memory." The obviousness rejection of claims 2 and 15 is reversed because Cunningham and Moriyama neither teach nor would they have suggested to one of ordinary skill in the art a selection switch coupled to the controller for selecting a data recovery procedure.

DECISION

The decision of the examiner rejecting claims 1 through 24 under 35 U.S.C. § 103 is affirmed as to claims 1, 3 through 14 and 16 through 24, and is reversed as to claims 2 and 15. Accordingly, the decision of the examiner is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

KENNETH W. HAIRSTON Administrative Patent Judge	)
LEE E. BARRETT Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
MICHAEL R. FLEMING Administrative Patent Judge	)

MERCHANT, GOULD, SMITH, EDELL,
WELTER and SCHMIDT
3100 Norwest Center
Minneapolis, MN 55402-4131

KWH/jrg

APPEAL NO. 97-0610 - JUDGE HAIRSTON

APPLICATION NO. 08/346,689

APJ HAIRSTON

APJ FLEMING

APJ BARRETT

DECISION: AFFIRMED-IN-PART

Typed By: Jenine Gillis

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Judge HAIRSTON

Judge CARMICHAEL

Judge URYNOWICZ

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DECISION: AFFIRMED-IN-PART

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Panel Change: Yes No

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Acts 2: ____

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